Question Paper

Exam Date & Time: 20-Nov-2018 (02:00 PM - 05:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

INSTRUMENTATION and MEASUREMENT FOR BIOLOGICALS [IBT 233]

Marks: 100 **Duration: 180 mins.**

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Answer 5 out of 8 questions.

1) a) Explain the principle of MS. How to distinguish the mass spectrum of 2,2 dimethylpropane from those of pentane and 2 methyl butane. (10)

b) Comment on isotopes in mass spectrometry. The mass spectra of two different cycloalkanes both show a molecular ion peak at m/z=98. One spectrum shows a base peak at m/z=69, and the shows a base peak m/z=83. Identify the cycloalknaes. (10)

2) a) Explain the instrumentation of UV spectroscopy in detail. Comment on the biological chromophores. (10)

b) Explain Beer's law and its limitations in detail. (10)

3) a) Explain the application of UV spectroscopy, absorbing species and electron transitions. (10)

b) Describe the basic NMR spectrometer and shielding and deshielding effect (10)

4) Comment on NMR scale and chemical shift trends. (10)

a)

b) Explain the applications of NMR in the field of biology. (10)

5) a) Explain the principle, procedure and applications of electrophoresis. (10)

b) Explain the principle of chromatographic technique and its classifications. (10)

6) a) Explain the principle, procedure and applications of HPTLC in detail. (10)

b) Explain the characteristics of electromagnetic radiation and applications. (10)

7)		Explain the instrumentation of IR and applications	(10)
	a)		
	b)	Comment on spectroscopy and electromagnetic spectrum.	(10)
8)		Describe the interpretation of proton NMR and its applications.	(10)
	a)		
	b)	Explain the principle, procedure and applications of bioaffinity chromatography	(10)

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